



Chapter 4 AIR POWER GOES TO WAR

Some have called World War II the “Air War” because for the United States, it started with an air attack at Pearl Harbor and ended with the aerial bombing of Japan 5 years later. During these 5 years, many lessons were learned about the use of air power. Moreover, during this one 5-year period, the airplane developed faster than during any other five-year period in its history.



Objectives

- Discuss** German, Japanese and Italian air power preparations for World War II.
- Discuss** US and British air power preparations for World War II.
- Recognize** the German combined arms approach to warfare.
- Recognize** the impact technology had on the Battle of Britain.
- Describe** the lessons learned from the outcome of the Battle of Britain.
- Describe** how the Germans used air power when they opened up a second front against the Russians.
- Identify** the only country using women to fly combat sorties in 1941.
- Discuss** why the Japanese plan for the attack on Pearl Harbor attacked American air power first.
- Discuss** the impact the North African air campaign had on military air power.
- Identify** the theories of the early air power theorists.
- Describe** the early Royal Air Force bombing experience before the start of the Combined Bombing Offensive.
- Describe** the effectiveness of the Army Air Corps bombing strategy at the beginning of World War II.
- Discuss** what changes in strategy and tactics led to the Allies gaining air superiority over Europe.
- Discuss** the impact air superiority had on the European campaign.
- Identify** the first objective planned for by the Japanese during their advance through the Pacific.
- Describe** how Allied air power stopped the Japanese advance.
- Identify** the reasons the Japanese-held islands located in the southwest Pacific had to be captured by the Allies.
- Identify** the most destructive air raid in history.
- Identify** why the atom bomb was used against Japan.
- Discuss** air power's role in war.
- Discuss** the lessons learned in the European Air Campaign.
- Discuss** the lessons learned in the Pacific Air Campaign.



World War II

The Treaty of Versailles, which ended World War I, restricted Germany from developing any type of military aircraft. The treaty did not, however, except for a brief 6-month period, prohibit German manufacture of commercial aircraft. The German aircraft industry started its revival in the early 1920s, building aircraft that could be very quickly converted from civilian to military use.

Many German aircraft builders also established manufacturing agreements in such foreign countries as Russia, Sweden, Denmark, Italy and Switzerland. At the time, many German pilots were trained in foreign countries, especially in South America. It is important to note the facilities in Germany and in many of these foreign countries were small. The factories, nor the industrial base, were large enough to produce the required numbers of aircraft and engines.



During the 30s, Germany started building its air power. The *Stuka* dive-bomber was an important part of Hitler's "Lightning War," or Blitzkrieg.

It was, therefore, under the disguise of commercial aviation that the German Air Force was built. By 1932, the German Air Force (officially nonexistent) consisted of three bomber squadrons, four fighter squadrons and eight observation squadrons. There were also 1,500 trained pilots and another 3,000 in training in 1932. When Adolf Hitler assumed power in 1933, the buildup became more obvious. By 1935 all pretense ended, and the Luftwaffe, the German Air Force, was officially formed.

In July of 1936, the Spanish Nationalists, led by General Francisco Franco, launched a revolution against the Spanish Loyalist government. Both Germany and Italy provided aid to the Nationalists and used this Civil War to test their armies and military tactics. This provided a proving ground for the pilots of the Luftwaffe, and tested many of the German aircraft that were used in World War II.

In Italy, the Italian Air Force had become obsolete following World War I. When Mussolini came into power in 1922, he started to rebuild it. They started with about 100 aircraft and built it up to about 2,600 by the time they entered World War II. The Italians not only fought in the Spanish Civil War, mentioned previously, but also against Ethiopia in 1935 - 1936. The Italians were battle tested and ready for World War II.

On the other side of the world, the Japanese Air Force was growing as well. They received training from a group of 60 French airmen who arrived in 1919 to provide assistance to the Japanese Army. The Japanese actually had two separate air arms, the Army Air Force and the Navy Air Force. Each had a separate mission. The Army Air Force was designed solely to support the Japanese Army, and the Navy Air Force was responsible for convoy protection, coastal patrol and submarine patrol.



The Japanese built a strong Navy. This included carrier-based aircraft like this Aichi Val. (EAA)

In 1920, the Japanese Navy built its first aircraft carrier. In 1921, a group of retired Royal Air Force officers from Britain trained the Japanese in carrier operations.

When Japan invaded Manchuria in 1931 and then drove into China in 1937, the Japanese Air Force performed well. They became combat tested and very experienced fighter pilots. The Japanese pilots were also tested against Russia during the Russian-Japanese border clashes from 1936 to 1939.

Allied Preparedness

At the end of World War I, the Allied Nations (England, France and the United States) had the most powerful air forces in the world. However, as mentioned earlier, without exception, each country made a mistake. Once the war was over, they all began cutting back. By the early 1920s, their air forces were very weak. This was occurring while the Germans, Italians and Japanese were expanding their air forces.

England emerged from World War I with an independent air force, the Royal Air Force (RAF). Between the world wars, they emphasized an offensive doctrine and planned for a large fleet of bombers rather than smaller pursuit aircraft (fighters) to defend their shores from enemy bombers. Their pilot training was excellent, and they stressed quality rather than quantity. When the British saw that the German Luftwaffe was building up and had the capability to attack England, they changed their offensive doctrine. Instead of building bombers for offensive purposes, the RAF turned to a defensive doctrine and began concentrating on building smaller fighter aircraft. The aviation industry began increasing its production, and money was provided to expand and enlarge the RAF.

When England entered World War II, she had a small well-trained Air Force and an industry that was capable of producing large numbers of aircraft. The first task of the RAF, therefore, was to defend England and hold off the German Luftwaffe. The famous aerial defense of England was called the Battle of Britain. Meanwhile in France, the nation that best understood the important lessons of air power taught by World War I, found itself completely unprepared for World War II.

After World War I, the French spent their money on the development of a ground defense. It was called the Maginot Line, and it was intended to keep the Germans from invading France. The French believed this new wall of well armed forts would turn back any invading army.

This is why the French Air Force was not born until 1936. The results were a small, poorly trained Air Force and an aviation industry, that because of labor disputes and low morale, produced very few



first-line aircraft. When World War II began, the French had about 400 first-line fighters, fewer than 100 modern observation aircraft and 400 obsolete bombers.

Following World War I, the United States' Army Air Corps was almost completely disarmed. Congress and the Army leadership failed to listen to General William "Billy" Mitchell's plea for separate, but equal Air Force. So, the Army Air Service received last priority for budgets enlarging and modernizing the nation's air arm. The mood of the United States was one of isolationism and this, coupled with the severe depression of the 1930s, resulted in very little money available for the military.

After World War II started, the United States began to see that it could not isolate itself from events taking place in the rest of the world. Even when France fell in 1940, a majority of Americans still believed that the United States should not become directly involved in the war. Many thought we should only provide additional assistance to Britain. The President and Congress did, however, begin to listen to the Army and Navy about improving defense, and providing money for strengthening it.

In 1940 and 1941, great strides were made building up American industry for war. Orders from Britain and France, and from the American military, began pouring into American aircraft companies. In 1939, the aviation manufacturers in the United States produced only 2,100 military aircraft for the entire year. By July 1940, production increased to 570 planes per month, and in September 1941, 1,900 aircraft were produced.

Despite the improvements, when Pearl Harbor was bombed on December 7, 1941, the United States military still used mostly obsolete equipment and had a shortage of military pilots ready for combat.

A New Type of War

Learning from Germany's terrible losses as a result of the trench warfare of World War I, German generals came up with a new type of warfare. It was called "Blitzkrieg" (lightning war). Blitzkrieg is also known as combined arms operations because the army and the air forces are used in combination with each other.

During World War I, armies lined up against each other and slugged it out. Terrible losses resulted for both sides. Thousands and thousands of men lost their lives and hardly gained an inch of ground.

At the end of that war, new inventions were used to break the stalemate. The tank was invented to safely move troops through enemy lines, and the airplane was used to drop bombs behind enemy lines. The result was that these new inventions changed warfare. Instead of lining up armies to slug it out on the battlefield, a new type of warfare emerged.

The new type of warfare, called combined arms, surprised almost everyone. The new tactics allowed territory to be gained quickly. Armed forts were by-passed, encircled, and cut off from supplies and reinforcements. Tanks and cannons with wheels, known as mobile artillery, allowed the army to run right through the enemy's lines. Combined with the airplane, this new doctrine of combining the firepower of the tank and the airplane worked well.

Airplanes allowed the army to spot enemy strongholds and by-pass them. Airplanes equipped with machine guns and bombs could easily "rain" bullets and bombs on top of the enemy. Warfare changed. The first to use it, the Germans, had the advantage until a strategy could be found to defeat this new type of war.



The backbone of the German Air Force was the *Messerschmitt Bf-109* similar to this Spanish version of the 109. (EAA)

The aircraft the Germans developed worked well for combined arms operations. Some, particularly the *ME-109*, *FW-190*, and *ME-262*, possessed outstanding qualities. The *Messerschmitt* 109 was the backbone fighter of the German Air Force and was produced more than any other fighter aircraft in World War II.

Turning to bomber aircraft, Germany's bombers did not compare to the American *B-17* or the British *Sterling*. This was by design, since the German doctrine of combined arms did not emphasize long-range bombing. All the

Germans needed for combined arms operations were short-and medium-range bombers. It was the British and the Americans who needed long-range bombers because they were located far away from the fight in continental Europe.

The German bombers were two-engine mediums, chiefly the *Heinkel* III and the *Dornier* 17. They also had the *Junkers* 87, the *Stuka*. The *Stuka* was perfectly designed for German Blitzkrieg, combined arms, operations and became a very highly publicized dive-bomber during the war.

War!

Austria was the first victim of German aggression. However, the Germans did not use warfare, instead they used propaganda and assassination. German troops marched into Austria and occupied it on March 11, 1938. On March 14, 1939, Germany took over Czechoslovakia in much the same manner.

Hitler tried the same tactics on Poland that had worked on Austria and Czechoslovakia. Poland, however, had a fairly strong modern army, and also had a formal treaty with England and France that promised armed support if attacked. Hitler was convinced that England and France would not intervene. When Poland refused to surrender, Germany invaded. The date was September 1, 1939, and this date marks the beginning of the fighting in World War II.

The German invasion of Poland was the first use of the German doctrine of combined arms operations, called Blitzkrieg, and it surprised almost everyone. The closely coordinated effort between the Luftwaffe and the German Army crushed all opposition.

The Luftwaffe first destroyed any opposing air force, generally by catching them on the ground with a surprise strike. Once this was done, the German Air Force hit railroads, ammunition dumps and troop concentrations without a fight. The German Army used their tanks and mobile artillery, called armored divisions, to strike rapidly through enemy defensive lines. Any attempt to reinforce the defenders or to retreat was immediately crushed by the Luftwaffe from the air. A new type of warfare had begun, and it was highly successful. Poland's Army, which was the fifth largest in Europe, was defeated in 20 days.

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The Germans used air power to machine-gun (strafe) and bomb enemy troops and supplies, but also to transport aircraft too. They moved infantry quickly to the battlefield, and their transport aircraft evacuated wounded soldiers and carried supplies to units moving speedily into new bases that were being setup as fast as they conquered new territory.

When Germany invaded Poland, Britain and France declared war on the Axis Powers (Germany, Italy and Japan), but were unable to provide any relief for Poland. Neither England nor France had sufficient military strength because they reduced the size of the armies after their tremendous victory in World War I. As a result of their lack of preparedness, the only thing they could do was initiate a defensive war.

France began by calling up its force to mobilize behind the Maginot Line, and England sent a small expeditionary force to take up defensive positions in France. They established a naval blockade of Germany, and ordered an increase in the production of planes and tanks to fight Hitler wherever he attacked next.



America started building a larger Air Force during the 30s. Although it resembled airplanes of WWI, the *Stearman* was an excellent trainer for combat pilots. (EAA)

Germany Takes Europe

To break the naval blockade in April of 1940, Hitler decided to acquire new ports. So, he decided to invade Norway and Denmark. This time the Germans used a new tactic. They parachuted in airborne infantry. This was the first time airborne troops were parachuted into enemy territory.

Like the invasion of Poland, the new German strategy worked well. Denmark was overrun in 1 day, and the Norwegian Army never really mobilized. The German airborne infantry landed at the Oslo Airfield and soon captured the Norwegian capital.

In 1 day, Germany had captured Norway's capital and its principal harbors. Although British troops landed to reinforce the Norwegians, they lacked the air power necessary to beat back the German Luftwaffe. The German Air Force controlled the air and the British were defeated. Norway surrendered in June 1940. All that remained free from German occupation was the Netherlands, Belgium and France.

While the Germans were taking Norway, the French continued to build up forces behind the wall of forts called the Maginot Line. German Blitzkrieg strategy called for bypassing strongholds and cutting them off from behind. This is what happened to France's infamous Maginot Line. Instead of running head-on into France's strong defensive fortress, the Germans simply went around it. They struck from the north through the Netherlands and Belgium.



Lacking the defensive air force to stop German air power, and with no air support for their Army, France fell in only 6 weeks. When France surrendered on June 22, 1940, only Britain's RAF stood between Hitler, England and the total conquest of Europe.

The Battle of Britain



The *Hawker Hurricane* was an outstanding British fighter. It was one of the “heroes” of the Battle of Britain. (EAA)

After their successes in France, the German Luftwaffe commanders urged an immediate invasion of England. The German Navy, however, was no match for the British Royal Navy and could not guarantee the security of the supply line across the English Channel.

In addition, the German Army needed time to secure the landing sites when they arrived. The best the German Army and Navy could hope for was a stalemate. What they needed was complete command of the air.

This is why Hitler decided not to invade England immediately, but to wait until the Luftwaffe could win

the war in the air. Germany needed to defeat the Royal Air Force first. Then they could concentrate on defending their supply lines and beachheads without being vulnerable to air attacks.

The problem with the German plan was that they didn't design the Luftwaffe to be a long-range bombing force. Remember, previously we mentioned that combined arms operations required short- and medium-range bombers to support the infantry. The Luftwaffe was not designed to do long-range bombing.

Also, the German aircraft industry did not have the capability to build the larger aircraft with bigger engines, fuel tanks and longer range. These facts played a large role in determining the winner of the Battle of Britain.

The air war started during the first week of August 1940. The Germans began with sporadic air raids. They tried to feel out British defenses. To do this, the Germans had four types of primary bombers: the *Junkers* 87, *Junkers* 88, several models of the *Heinkel* III, and the *Dornier* 17 (sometimes known as the *Domier* 215). They also had fighter escort to defend against the RAF fighter aircraft. The *Messerschmitt* 109s and 110s provided the escort.

The entire strength of the Luftwaffe was not thrown into the campaign at once. The attacks began on a moderate scale. During the next 10 days, mass formations of German bombers, along with their fighter escorts, made daylight raids on shipping and southern ports.

The RAF put up a heroic defense. The RAF fighters, like the *Hurricane* and the *Spitfire*, assisted by ground defenses, caused the Germans to call a brief halt to operations after August 18. On that day, they had lost 71 planes and had another 23 damaged. The RAF was getting the best of the Luftwaffe.

From August 8 - 23, the Luftwaffe lost 403 planes and had another 127 damaged. In contrast, the RAF announced that they had only lost 153 planes. The world had never seen such an aerial display.

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British radio broadcast the battles live. Britons huddled around their radios and cheered the RAF on to victory.

The Luftwaffe had a problem. Their short-and medium-range aircraft could not fly from their bases in France, over the 22 mile English Channel, and then fight the RAF and still have enough fuel to reach their targets successfully. Two things that were mentioned earlier were now beginning to hurt the Luftwaffe.

First, they could not produce larger aircraft in the 1920s and early 1930s because the industrial base was not there. Secondly, when the Germans could have changed their production efforts, they chose not to because their new Blitzkrieg, combined arms, and tactics called for short-and medium-range aircraft only.

At this point, the Luftwaffe decided to revise their tactics in order to concentrate on defeating the RAF. In the second phase of the campaign, from August 24 through September 6, the Luftwaffe reduced its bomber formations in size, and increased the number of fighter escorts. Targets were changed as well. The attacks were now directed mainly against air force bases and aircraft factories instead of shipping and harbors.

This campaign was designed to knock out the RAF. More escorts were added to fight as many RAF fighter aircraft as possible. The German's changed targets so if RAF pilots survived the fight, they wouldn't have air bases to which they could return and land.

In addition, if their aircraft were damaged, no replacements would be available. The fight for command of the air over the English Channel was on.

Once again the RAF successfully defended England, but it was not an easy fight. The Luftwaffe relentlessly attacked British defenses. The British leaned on new technology to help defend England. They built a warning system that relied on visual observation, telephones, and something new, radar.

Radar helped the British see the Luftwaffe when they were on their way across the English Channel. When radar first spotted the Luftwaffe, a telephone call was made to alert the nearest air base. While the pilots were getting ready, observers on the coast of England called in updates on the latest location of the Luftwaffe. This allowed RAF pilots to conserve fuel as they could takeoff and go directly to the fight. It also allowed the RAF to mass as many fighters as possible, and hopefully outnumber the Luftwaffe during the fight.

The Luftwaffe reacted to the RAF's tactics by attacking British radar sites. Fortunately, the bombing was not very effective because the British used decoys to distract the Luftwaffe, and after the Germans attacked the sites, they did not attack them again for a very long time. This allowed the British the opportunity to repair the radars.



One of the great legends of WWII, the *Supermarine Spitfire*. (EAA)



The Spitfire is a prized collector's airplane today. (EAA)

Nonetheless, repeated Luftwaffe attacks on RAF bases, factories and radar sites did take their toll. In fact, the Luftwaffe had the RAF on the ropes, and was about to win the battle for the skies over Britain.

However, the RAF's Bomber Command was not standing idly by while the Fighter Command bore the brunt of the German assault on Britain. Bomber Command was also launching bombing raids across the English Channel. One attack, although minor because it inflicted little damage, had a very large impact on the Battle of Britain. In fact, many argue that it was the turning point in the war because it infuriated Hitler.

Hitler was very angry when RAF bombers made it through German defenses and bombed Berlin. He, therefore, ordered the Luftwaffe to stop their attacks on RAF bases and aircraft factories. Then he directed a retaliatory attack on London.

Hitler did not realize that he had let the RAF off the hook. The RAF had been hurt, and hurt badly. They needed time to recover, but the Germans did not know this. Thus, Hitler inadvertently, gave the RAF time to recover.

This new phase and third phase (from September 7 to October 1) of the battle, was the peak of the German air effort. The Luftwaffe now directed their new effort toward industrial areas and London, in particular.

Meanwhile, Fighter Command repaired its runways, fuel supply areas, maintenance facilities and radar sites. This allowed the RAF to recover and reenergize their efforts. They needed time and they used it wisely.

By the end of September, the RAF turned the corner and began to assert control of the air over the British Isles. The long flights to London gave the RAF more opportunity to attack Luftwaffe aircraft. The British destroyed 435 planes and damaged 161. Total German losses from July 10 now amounted to 1,408 planes destroyed. Unable to sustain such losses, the Germans decided to change tactics even further.

This time, nearly all their so-called "long-range" bombers were withdrawn, while fighters and fighter-bombers continued the campaign with a decreasing number of daylight attacks and an increasing number of attacks at night. They did not change targets, however, and this was key.

London was still the principal target. During the Battle of Britain, the Luftwaffe dropped 190,000 tons of bombs on Britain, killing more than 43,000 civilians and seriously wounding another 56,000. Although, the British suffered heavy casualties and extensive materiel damage, they did not lose control of the skies over the English Channel. This was the initial German objective of the Battle of Britain. They wanted to control the skies so they could invade, but they failed.

The Luftwaffe's aerial blitz was gradually reduced to intermittent attacks that continued throughout the spring of 1941. The Luftwaffe had sustained its first major defeat, and Britain had been saved.

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In retrospect, there were many lessons to be learned from what has been called the finest defensive air battle ever fought in the history of air power.

First and foremost, it must be recognized that the Battle of Britain was a defensive battle for the RAF. Britain's decision to emphasize a defensive mind set was a key to the RAF's victory. The RAF started building fighter aircraft instead of offensive bombers, and concentrated on a defensive strategy centered on the Royal Observer Corps and the new radar.

So, the RAF had the right aircraft for the battle, while the Luftwaffe did not. The Germans had short-and medium-range aircraft designed to support their Blitzkrieg doctrine of combined arms operations. They did not have the aircraft to conduct long range strategic bombing.

Second, the RAF's use of radar cannot be understated. Without the radar, the RAF's Fighter Command would not have been able to mass their aircraft and take the fight to the Luftwaffe.

Thirdly, Germany's lack of determination and persistence was another key to victory. If the Luftwaffe had started out by attacking the RAF and had not given up, they may have won. Instead, they started out attacking shipping, then finally London. The lesson here is that if you want to obtain command of the air, you must concentrate your offensive efforts on defeating the enemy's air force.



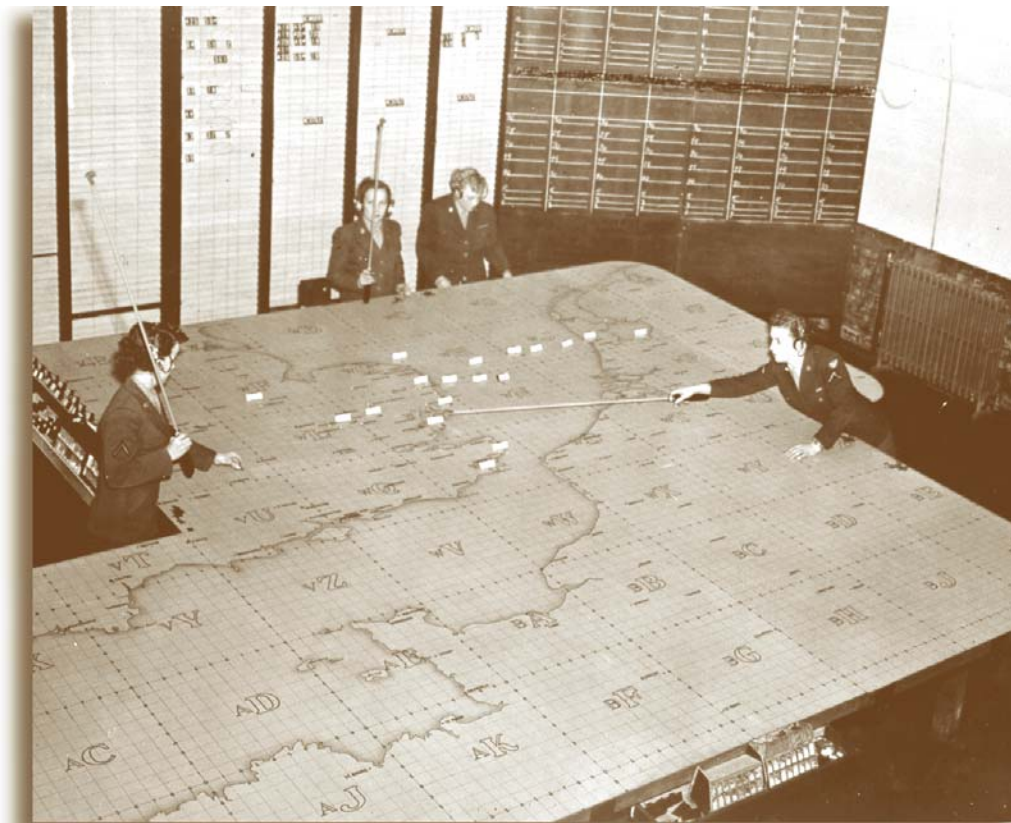
Ryan, the company that built Lindbergh's *Spirit of St. Louis*, later manufactured thousands of military training planes.

War on Two Fronts

When France surrendered to Germany in 1940, Italy joined with Germany and declared war on Great Britain. The immediate goals of the Italians were to capture the oil-rich Middle East and the Suez Canal. They also invaded Greece to secure their invasion of Egypt.

In January 1941, the German Luftwaffe moved approximately 330 aircraft into Italy and Sicily to support the Italians. On January 18, the Germans inaugurated the first of a long series of heavy air attacks on the island of Malta. Malta was a strategically located base for British operations in the Mediterranean, and therefore a key target.

Before the end of 1941, the island experienced its one-thousandth air attack, but the British continued to withstand the pounding from the Italians and the Luftwaffe. By using advanced bases in North Africa, the Luftwaffe also began to strike at British forces in the Suez Canal area and to participate more actively in the African Western Desert Campaign.



USAAF personnel are shown here plotting an 8th Air Force bombing mission.

Similarly, during the Battle of Britain, pilots were directed to incoming German attackers by ground-based controllers using radar.

Meanwhile in Eastern Europe, by April 1941, German bombers moved into the Balkans in preparation for the next Blitzkrieg operation. From bases in Hungary, Bulgaria and southern Germany, the Luftwaffe began extensive operations in support of German ground forces against Yugoslavia and Greece.

The British expeditionary forces, though fully occupied in North Africa, came to the aid of Greece. But this time, the German onslaught overpowered all opposition, and German and Italian victories followed in rapid-fire succession. By the end of April, most of the British forces had been evacuated from Greece, and the Germans had entered Athens.

The next big activity for the Luftwaffe was to prepare for an airborne attack against the island of Crete, Greece. This attack was a spectacular and successful demonstration of glider-borne and parachute troop operations. After seizing key air bases, advanced German forces were supplied and reinforced by *Junkers* 52 troop carriers, while Luftwaffe bombers attacked the British who were attempting to evacuate the island.

By June, the British had been forced to yield Crete to the invaders. With new bases in Greece and Crete, the German Air Force was able to bring more strength to bear against British forces in the African Western Desert. The Luftwaffe, for a brief period, increased its support of German ground forces in the Northern Africa campaign.

Germany now occupied all of south and southeastern Europe and was moving through Africa against heavy British resistance. The Germans were also successfully blockading the British Isles



through a combined submarine and Luftwaffe effort. However, Hitler made another big mistake. On June 22, 1941, Germany invaded Russia and created a second front.

The Russian Front

Because Hitler was convinced the Russian campaign would be concluded within a very short time, he was opposed to the destruction of Russian factories by bombing. Upon his insistence, the Luftwaffe was used primarily as an extended form of artillery in support of ground forces.

In its initial assault against Russia, 3,300 aircraft out of a total strength of approximately 5,900 operational and non-operational aircraft supported the



The Russian *Stormavik* Fighter

German Army. In the drive toward Moscow, in the autumn of 1941, the Luftwaffe deployed almost 60 percent of its strength along the eastern front and suffered extremely heavy losses.

Russia met the Luftwaffe with everything it had, including women pilots. Russian women flew combat missions almost from the beginning of the war. At this time, they were the only country among the major powers to use women in combat sorties.

In 1941, Major Marina Raskova formed three regiments of women fliers who flew fighters and bombers. These were all-female squadrons, but women also flew in male squadrons. Lilya Livyak was a top woman ace who destroyed 12 German planes. In 1943, at age 22, she was shot down and received the Soviet Union's highest award for aviators.

Multiple Fronts Spread Them Thin

The Russian operations caused no immediate increase in German aircraft production. The German high command, apparently still convinced that the hostilities could be concluded in short order, seemed to feel that the impact of fighting on three major fronts was small. The Luftwaffe was fighting in Eastern Europe, the Mediterranean, and North Africa. As a result, German air strength was spread too thin and air attacks on England and British shipping could not continue at their previous pace. They eventually dwindled almost to the point of cessation.

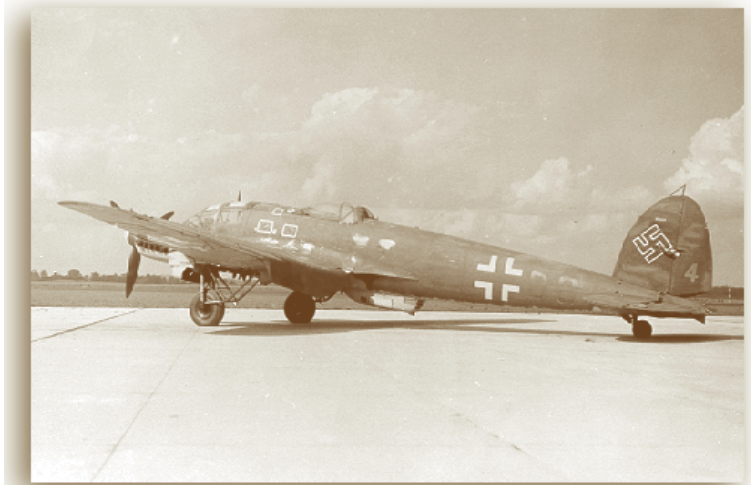
During the last 6 months of 1941, no night attack against Britain exceeded 15 percent of the maximum scale of effort made during the autumn of 1940. The Luftwaffe assumed a defensive attitude in the west.



Hitler supposedly promised Luftwaffe leaders that the air offensive against Britain would be resumed after the defeat of Russia, but the opportunity had come and gone in 1940, and the future for the Luftwaffe in the west was only a defensive mission.

Hitler had hoped for a short-duration war, but was now settling down for a long struggle of large land armies. In this type of a struggle, Germany was bound to lose, especially when she was committed to fighting on three different fronts—British, Russian and African.

As the year 1941 drew to a close, Germany was still a powerful nation and the Allies (British and Russians) were still on the defensive. It was at this point that two new nations entered the war, one on the side of the aggressors and one on the side of the British and the Russians. The war, which had been limited to Europe and the Middle East, became a true world war. On December 7, 1941, the Japanese bombed Pearl Harbor and the United States entered World War II.



The *Heinkel HE III* bomber was used extensively in the Battle of Britain.

The United States Enters the War

Strategy

Even before the United States entered World War II, there were several conferences between allied leaders (Britain, United States and Russia) to discuss the conduct of the war. The overall strategy decided on by the leaders gave priority to the war in Europe and defeating Germany first.

Since the Allies believed that Japan might also go to war against them, the Allies needed to contain Japan until Germany was defeated. There were several reasons for this. First, Germany was viewed as a more immediate threat and her industrial ability was more feared than Japan's. Secondly, the Allies in Europe had already been involved in the war for over 2 years and they needed more immediate relief. Thirdly, the Allies did not believe their capacity, even including the United States, would be sufficient to allow a maximum effort in both Europe and the Pacific.

Japanese Territorial Strategy

The Japanese attack on Pearl Harbor was not a sudden irrational act. It actually began as early as 1931. The island nation of Japan had always depended on imports for her survival. As Japan's population increased in the early 1930s, she began to develop plans to expand her territory into China and Indochina to gain the raw materials she needed to become an industrial nation.

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Japan moved into Manchuria and China in 1939 and expanded into French Indochina after the French surrender in 1940. Alarmed by these movements, the United States and Britain embargoed all trade with Japan. This embargo forced Japan to either give up her thoughts of expansion or to resort to war. Japan chose the latter.

The Japanese strategy called for striking swiftly in several directions, capturing the East Indies, Philippines, New Guinea, and the Marshall, Caroline and Mariana Islands. Japan would then use these as a defense perimeter by fortifying them and building air bases.

There were two weaknesses in the Japanese strategy, and they were both centered on her Navy and Merchant Marine. First, Japan needed to import large quantities of raw materials to manufacture the war goods necessary to sustain military operations. So she needed to ensure that her Merchant Marine could safely cross the Pacific.

Secondly, Japan's naval fleet was spread across more than 6,000,000 square miles of the Pacific. Japan realized this, and in order to succeed, planned to destroy the United States Pacific naval fleet at Pearl Harbor.

Pearl Harbor

The Japanese attack on Pearl Harbor early in the morning of December 7, 1941, was a well-planned and skillfully executed air attack. The Japanese task force of six aircraft carriers and 25 support vessels left Japan on November 28. They were directed to a spot 200 miles north of Hawaii before dawn on December 7th.

At 5:00 am on December 7th, two Japanese *Zero* reconnaissance planes surveyed Pearl Harbor and reported that the fleet was there. One hour later, takeoff orders were issued and soon 50 fighters, 50 horizontal bombers, 40 torpedo bombers, and 50 dive-bombers were in the air. Forty-five minutes

later, a second wave composed of 50 horizontal bombers, 80 dive-bombers, and 40 fighters followed.

The primary purpose of the Japanese attack was to cripple the American fleet at Pearl Harbor. To do this, the Japanese decided to first achieve temporary air superiority over Hawaii. After achieving command of the skies, they could then concentrate their attack on the American naval fleet with little to no interference. Therefore, they planned to eliminate American air power



Mitsubishi A6M2 Zero Fighter



Japanese Attack on Pearl Harbor

on the ground with a surprise attack. At 7:55 am, the Japanese began bombing and strafing American airfields on the island of Oahu.

As planned, every advantage lay with the Japanese because they had achieved complete surprise. One Japanese advantage arose from America's fear of sabotage. On November 27, 1941, American Air Force and Navy airplanes had been taken out of their hangars and parked closely together on runways as a precautionary measure. They wanted to make sure no one on foot could get to their aircraft. So they put all of the planes in one place under armed guard.

The problem, of course, was that this made them vulnerable to an air attack. The Japanese destroyed 96 Army and 92 Navy planes and damaged 159 more. During the attack, only 6 Army fighters and 36 Navy aircraft were able to get into the air.

Meanwhile, as the Japanese were wiping out American air power on Oahu, other Japanese pilots were taking advantage of their air superiority. The Japanese attacked Pearl Harbor where 8 battleships, 7 cruisers, 28 destroyers, 5 submarines and 32 other ships sat vulnerable to the surprise attack.

For 30 minutes, starting at 8:00 am, the helpless fleet, moored and wholly unprepared was pounded by wave after wave of dive-, torpedo and horizontal bombers. After a 15-minute lull, the Japanese renewed the attack with vigor.



In total, the Navy suffered a staggering blow. The battleships *Arizona*, *California* and *West Virginia* were sunk, the battleship *Oklahoma* capsized; and the battleship *Nevada* and three other battleships were severely damaged. Three cruisers, three destroyers, and a seaplane were also damaged.

The Japanese delivered one of the worst defeats in American military history upon the United States' Pacific fleet in Hawaii. In addition to heavy losses of airplanes and ships, the human cost was staggering. The Navy and Marine Corps totaled 2,117 killed, 960 missing and 876 wounded. Two hundred and twenty-six Army and Army Air Force personnel were killed and 396 wounded. The Japanese lost 28 planes and a total of 64 men in the entire operation.

The only bright spot, for America, in the bombing of Pearl Harbor was that the Japanese had also hoped to destroy the four aircraft carriers of the Pacific fleet. Fortunately, they were on maneuvers and not present when the attack occurred.

Because of the treaties between Japan, Germany and Italy, the attacks against Pearl Harbor brought the United States into the war automatically against all three of the Axis Powers. On December 8th, the United States declared war on Japan; on December 11, the United States declared war on Germany and Italy. England and the other Allies followed suit and declared war on Japan. Now, all the major powers were engaged in a total world war.

US Air Power Spins Up

The aircraft production of 1940 and 1941 was increased drastically after the United States declared war on the Axis Powers. However, the Army Air Forces still had problems with pilot training and their total strength. After Pearl Harbor, the "contract" schools increased their production of pilots, and on December 7, 1942, the Civil Aeronautics Authority's (CAA) Civilian Pilot Training Program became the CAA War Training Service. This change in name gave official recognition to changes that had already occurred in the armed services.

Beginning July 1942, and lasting until the following December, training under this program was given only to members of the inactive reserve of either the Army Air Forces or the Naval Reserve. In December 1942, the Navy placed its trainees under the program on active duty. The Army took this step in the summer of 1943. In all, some 300,000 pilots were trained in the War Training Service Program which lasted until June 1944, for the Army and until August 1944, for the Navy.

In the autumn of 1942, the Women's Auxiliary Ferrying Squadron (WAFS) was



Female pilots, in front of the B-17E, ferried aircraft from factories and repair facilities.



established within the Army Air Forces Air Transport Command. The WAFS personnel were civil service employees and not military members of the Army Air Forces and were not given the Army Air Corps uniform.

Nancy Love, the WAFS's first director, personally led the group ferrying aircraft. To prepare women for their ferrying duties, Jacqueline Cochran formed the Women's Flying Training Detachment (WFTD). These two organizations eventually merged and in August 1943, the WAFS and the WFTD formed the Women's Air Force Service Pilots (WASP). With Cochran as the first director, the group continued delivering planes to England and to other spread out locations.

European Campaign

Grand Strategy

Once the United States entered the war, the overall allied strategy changed from defense to offense; recapture territory occupied by Germany; and then finally, force Germany and then Japan to unconditionally surrender. The campaigns were divided in two. The first was the European campaign and it took precedence over the other in the Pacific.

To understand the role air power played in World War II, we must examine how the military leadership treated air power at the start of the war. First, the Army and the Air Corps leadership had different ideas on how to use air power.

The Army leaders envisioned a large invasion of France and then a fight across France and into Germany. The allied Army would crush the Axis forces and force the enemy to surrender. So, they viewed air power as necessary to support their ground operations.

Air Corps leaders viewed the use of air power differently. There were two things air power could

do. It could support army ground operations, and it could launch large-scale strategic bombing operations. Using large bombers under the control of air force commanders, long-range bombers could attack deep within an enemy's homeland and destroy his will and ability to fight the war.

Air power was not just for supporting ground operations. That is what the Germans were doing, and one of the reasons they lost the Battle of Britain. They



An American B-17 Flying Fortress. Note the guns in the nose, rear, sides and on top.
(EAA)



were not equipped for long-range bombing. The United States on the other hand, had the *B-17*, a bomber which was as fast as any fighter and armed to defend itself.

Learning in North Africa

One of the first operations conducted by Army Air Corps aircraft occurred in North Africa. The Allies were fighting a determined German effort to push them out of Africa. The German Luftwaffe harassed and pounded allied ground forces. Although each allied ground commander had some aircraft at his disposal, they were out numbered by the Luftwaffe and continually beaten.

The problem was first identified by the British and later by the Americans, who also had to learn the lesson the “hard way,” before taking counsel. Like the British, the Americans parceled out their air assets to individual Army commanders who used them to protect their troops from continuous Luftwaffe assaults. Each time the Luftwaffe attacked one of the Army units, the units tried to defend themselves and received very little help from the rest of the units nearby. This resulted in the Army Air Corps being outnumbered and beaten by the Luftwaffe every time.

The Army soon followed the RAF’s lead and centralized control of the air assets. This way when the Luftwaffe attacked, they would not be met by just one Army commander’s limited amount of airplanes. Instead, the Luftwaffe would meet a much larger number of aircraft.

The centralized control of aircraft worked so well President Roosevelt and Prime Minister Churchill decided to further centralize control of the air forces at the allied level over the entire European Theater.

This lesson learned had a tremendous impact. Centralized control eventually led to the defeat of the Luftwaffe in North Africa. The German Afrika-Korps, led by Field Marshal Rommel, began to feel the effects immediately as supplies of food, water, fuel, ammunition and replacements ran short. In October 1942, Rommel began retreating, but the Ninth Air Force and the RAF harassed his retreat.

Once allied air forces gained air superiority over North Africa, the war on the ground turned around. By May 1943, the Axis forces were defeated in Africa. The United States Army Air Force learned several important lessons that would be used during the rest of World War II and are even still used today.

The most important lesson revealed that centralized control of the air forces allowed the following priorities (decided on after the initial defeats in North Africa) to happen:

1. Gain Air Superiority: Attack enemy airfields, repair shops, fuel supplies, and aircraft. This ensures that air operations can be conducted without meeting enemy resistance.

2. Interdiction: Cripple enemy supply lines, railroads, bridges, highways, supply dumps, troop concentrations and communications to isolate the battle area and prevent the enemy from entering or leaving the battlefield.

3. Close Ground Support: Use air power to bomb and strafe enemy troops and gun positions, and provide air cover for allied troop movements.



In fact, the lessons learned in North Africa are so important they are still used today in the United States Air Force. One of the key principles of air power today is the centralized control of air assets.

Developing a Strategy

At the beginning of World War II, there were several theories on how to use air power. Before the United States entered the war, planners thought about how to best use America's air power. One theory came from the book called *Command of the Air*, written by Italian Air Marshal Giulio Douhet. Another theory was that of Sir Hugh Trenchard from England. Other theories were advocated by General Billy Mitchell and Captain Claire Chennault, both Americans.

Air Marshal Douhet wrote about gaining air supremacy with a massive first strike. This strike was supposed to be a surprise attack on the enemy's aircraft that were still on the ground. With little to no enemy opposition, one could then fly over the enemy's fielded forces and attack their population



**The Lancaster, one of
England's greatest
WWII bombers.
(EAA)**

at home. This would wear down the enemy's will to resist, and they would eventually give in. Douhet believed that the strength of air power was so great, a large ground war would not be necessary.

Trenchard, who is considered to be the "Father of the RAF," also believed in long-range bombing. He thought that a proper force mix was about two-thirds bomber aircraft and one-third fighter. He differed a little with Douhet in what targets to hit.

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He thought that air power could paralyze the enemy by knocking out its key vital centers. Bombing attacks would destroy the enemy's factories. Afterwards, the workers would have nowhere to work and paralysis would set in and destroy the enemy's will to continue the war.

American Billy Mitchell also believed that air power could fly over the enemy's fielded forces and take the war to the enemy's cities, and destroy their will to resist. He thought that 20 percent of the aircraft should be bombers, 20 percent small attack aircraft, and 60 percent should be fighter aircraft. He also thought the Navy should have at least 20 aircraft carriers.

All three theorists believed in long-range bombing and, most importantly, believed that the bomber would get through enemy defenses to its target. American Claire Chennault, on the other hand, did not believe that the bomber would get through unmolested. In fact, he proved it during an air exercise at Fort Knox, Kentucky, where he intercepted the bombers a good distance from their targets.

With this data to work from, planners at the Air Corps Tactical School at Maxwell Field in Alabama went to work. In essence, the result looked a lot like Douhet, and little like Mitchell and Trenchard, and not at all like Chennault. The Air Corps Tactical School also believed that the bomber would be able to get through enemy defenses to its targets. They, therefore, developed a theory that called for unescorted



Long-range reconnaissance planes, like the *PBY*, patrolled the vast expanse of the ocean. (EAA)

high altitude, daylight, precision bombing. In other words, they ignored Chennault's warnings. They decided that a well-armed bomber could fly high over enemy guns and with a new secret bombsight, called the Norden Bombsight, place bombs accurately on target. With that decided, America went to war.

The Eighth Air Force was formed to perform the strategic bombing of Germany, and moved to England. When they got there, they found that the RAF did not agree with their strategy. They had



already tried daylight bombing and suffered many losses. The RAF claimed their losses from German fighters and anti-aircraft fire were less at night, and that daylight bombing was not the way to go. The United States claimed better accuracy with their new secret bombsight and persisted for daytime bombing.

In theory, it did seem like a good plan. With the Americans bombing during the day, and the British bombing at night, the pressure on Germany would never let up. On August 17, 1942, the plan was enacted and the bombing of German forces started.

The Combined Bomber Offensive

Throughout the war, the RAF and the American Air Force continued using their own strategy, and they did prove to complement each other. At the beginning, first priority targets were submarine factories, docks and ports. The German submarines were doing tremendous damage to allied naval convoys and had to be stopped. In order to carry the war into Germany, both in the air and on the ground, the supplies had to get through.

Second priority targets were aircraft factories and munitions plants, and third priority went to communications and transportation systems.



The immortal *B-24 Liberator* was used worldwide, in WWII, but is best known for its raids on the Romanian oil field, Ploesti. (EAA)

Throughout 1942 and 1943, the Eighth Air Force's *B-17 Flying Fortresses* and *B-24 Liberators* bombed targets located mostly in France. During this time, the Allies were still in a building phase, trying to get aircraft to England from the United States and training the crewmembers. Also, the Eighth Air Force was having trouble with their strategy of unescorted, high altitude, daylight, precision bombing. The bomber was not getting through German defenses without a fight that resulted in many losses.

During the late summer and early fall of 1943, the Eighth Air Force made its first big effort at bombing deep inside Germany. The results were disastrous. In six missions from July 24 to July 30, they lost 92 bombers. Considering that the *B-17* carried a crew of 10, over 900 aircrew were shot down and many lost their lives.

On August 17, in a raid against Schweinfurt and Regensburg, 60 bombers were lost. During the second week in October, 148 bombers were lost. The Luftwaffe's *FW-190 ME-109*, *ME-110*, and *ME-210* fighters simply chewed-up the American bombers. The heavy losses had to stop, and an order was

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An American B-17 braving anti-aircraft fire on its way to Germany.



Damaged B-17 returns to base and unloads injured crew.

issued to stop the air raids into Germany. There was no way the Americans could continue to lose aircraft and personnel at this rate. They simply did not have enough resources to continue at such a horrific loss rate.

The Americans reconsidered their strategy of unescorted, high-altitude, daylight, precision bombing. It seemed that Chennault was right. The bomber would not “always get through.” Escorts were needed and the *P-51 Mustang* was on the way.

The Americans also decided they needed to change their tactics. They gave strict instructions to the short-range escorts to stay with the bombers as far as they could. Instead, new instructions allowed the fighter pilots the freedom to chase enemy fighters and shoot them down.

When the Combined Bomber Offensive resumed, the fighter escorts were modified with extra fuel tanks that could drop off. The drop tanks gave them a longer range, and allowed the fighters to drop them whenever the enemy appeared. This way the tanks did not slow them down in combat.

By the spring of 1944, the drop tanks were working and the *P-51 Mustang* had arrived. The long-range fighter escorts now allowed bombing activities to resume deep into Germany.



It was the fastest fighter-bomber of WWII. It had two names, *Mosquito* and the *Wooden Wonder*. (EAA)



The P-51 Mustang helped turn the tide of WWII's air war. (EAA)



On March 4, 1944, the first raid against Berlin was flown. The priority targets were now fighter-manufacturing facilities, as well as oil refineries that produced fuel for the Luftwaffe. Other targets included engine manufacturers and ball bearing manufacturers. The ball bearings were targeted because almost all of the enemy's war-fighting machines, including aircraft, needed ball bearings.

Results of the renewed offensive into Germany were very good. The most important product of the new offensive was air superiority. The new tactics, combined with the bombing of the oil refineries hurt the Luftwaffe. American fighter escorts were now aggressively hunting down the Luftwaffe.

Meanwhile, aviation fuel was becoming scarce, which reduced Luftwaffe pilot training activity. New pilots had less training and as a result, less skill. The Americans slowly gained the upper hand and the Luftwaffe ruled the air over Europe no more.



The P-47 Thunderbolt was one of the great fighters of WWII. (EAA)



The Normandy Invasion

On June 6, 1944, the Allies landed in Normandy, France, starting the invasion of Europe. Both the tactical and strategic air arms of the US Army Air Forces and the Royal Air Force supported the invasion. The preinvasion air strikes went on for 2 months before the landings. These strikes were made against the Luftwaffe, railroad centers, coastal batteries and all airfields within a 130-mile radius of the landing beaches.

With air superiority obtained, the Normandy Invasion was almost completely unopposed by the Luftwaffe. Air superiority saved countless lives and pieces of equipment and hastened the defeat of Germany.

The strategic bombing of Germany continued after the Normandy Invasion with priority given to aircraft factories, oil refineries and transportation facilities. By 1945, the Luftwaffe had been beaten and was no longer a serious threat to the British and American bombers.

The Eighth and Fifteenth Air Forces were now built up to the point that it was not unusual for 1,000 to 1,500 bombers to be in the air every day. On April 15, the strategic bombing of Germany ended because there were no targets left to bomb.

On May 7, 1945, Germany surrendered and the war in Europe ended. During the air war in Europe, British and American planes dropped nearly two and one-half million tons of bombs. The Army Air Forces and the RAF lost approximately 8,000 bombers and 7,000 fighters. Luftwaffe losses were nearly 33,000 aircraft destroyed.



B-17 aircrew praying prior to takeoff from England.



ACES IN EUROPE

The Luftwaffe produced the most prolific aces of the war. The top three German aces shot down a total of 928 Allied aircraft. The top three European Theater of Operations American aces shot down 86 Axis aircraft.

Maj. Erich Hartman	Germany	352
Capt. Hans H. Wind	Finland	75
Maj. Gen. I.N. Kozhedub	Russia	62
Prince C. Cantacuzino	Romania	60
Gp. Capt. J. E. Johnson	England	38
Lt Cvitan Galic	Croatia	36
Lt P. Clostermann	France	33
Flt Lt G. F. Beurling	Canada	31
Col. Francis S. Gabreski	United States	31
Lt Dezso Szentgyorgyi	Hungary	30



The B-25 Mitchell, a medium-range bomber, on a bombing run.
(EAA)

The Pacific Campaign



One of the Navy's first fighters, of WWII was the Grumman Wildcat. (EAA)

While the Allies were fighting the war in Europe, they were also fighting a holding action in the Pacific, and they were not winning. By the summer of 1942, the Allies had been pushed back all the way to Australia in a series of Japanese victories.

At the same time as the attack on Pearl Harbor, the Japanese launched an offensive against the American bases on Midway Island, Wake Island, Guam, Hong Kong, Thailand, Burma and the Dutch East Indies. By March of 1942, the Japanese occupied the entire area of the southwest/central Pacific, which was what they had outlined in their original war plan.

Japanese/Allied Strength

From a military standpoint, Japan was stronger than either the British or the Americans. The British were fully engaged with the Germans in Africa and in defense of their homeland, so they would not be an immediate threat to the Japanese in the Pacific.

At the time Japan entered the war, they had an army of 2,400,000 well-trained men and 3,000,000 reserves. The Japanese Air Force consisted of 7,500 aircraft, and they were making over 400 new aircraft per month.

Opposing the Japanese in the Far East, the Allies had a force of about 550,000 poorly equipped Army troops, less than 1,000 obsolete aircraft, and nearly 90 naval ships.

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The Japanese objectives in all of these campaigns were the same. Their air power would first gain air superiority. Then they would follow with an invasion. The Japanese controlled the air. That made it impossible to resupply allied troops. It was only a matter of a short time before defenders had to surrender. The Allies were losing and were gradually being forced back toward Australia. By March 1942, what remained of the allied air forces and navies had been evacuated to Australia.

Air Power Stops the Japanese Advance

The advance of the Japanese in the Pacific was stopped in the spring and summer of 1942 by two battles that were fought entirely by air power. These were the Battle of the Coral Sea and the Battle of Midway. Both of these battles were naval battles, but for the first time in history, these battles were conducted without the surface ships ever seeing each other, or firing a shot. They were fought entirely by aircraft.



The P-40 was one of the first US warplanes to encounter the Japanese. (EAA)

These two battles established the strategy for all of the rest of the naval battles of the war. The aircraft carrier, rather than the battleship, became the primary weapon of the US Navy.

Task forces from the United States and Japan met in the Battle of the Coral Sea off the East Coast of Australia on May 7 and 8, 1942. After reconnaissance aircraft learned where the enemy was hiding, aircraft from the carriers were launched. Their primary targets were the enemy aircraft carriers.

After a 2-day battle involving hundreds of dive-bombers, torpedo bombers and fighters, the Japanese lost one aircraft carrier and 100 aircraft. The United States lost the carrier *Lexington*, one destroyer, one tanker and 50 aircraft.



Almost exactly 1 month later, the United States and Japanese navies met again in the Battle of Midway in the north central Pacific. Midway was the first defeat of the Japanese Imperial Fleet in over 300 years.

The Japanese objective at the Battle of Midway was to lure the Americans into a massive battle. Once defeated, the United States would ask for peace. To do this the Japanese wanted to pretend that they were going to attack Alaska. When the US naval fleet exposed their position, they would surprise them from a different direction and overwhelm them.

The key to the Japanese plan was secrecy. Like Pearl Harbor, this was supposed to be a surprise attack. But this time it was the Japanese who were surprised. US intelligence personnel broke the secret code of the Japanese and found out that Midway was the real target. Now, all the Navy had to do was to find out where the Japanese were located.

A combination of skill, luck and technology helped the Americans find the Japanese fleet. Radar at Midway Island detected the Japanese attack. Knowing this, the aircraft carrier commanders launched the US counterattack. Meanwhile, US reconnaissance aircraft located the rest of the fleet and more counterattacks were launched. When Navy dive-bombers from the carriers, and B-17s and B-26s launched from Midway arrived, they found the Japanese carriers vulnerable to attack.



The Vought F4U Corsair was used by the famous Black Sheep Squadron in World War II. (EAA)

Pacific Fleet, the biggest impact was Japan's loss of over 100 front line pilots. The loss of their best pilots was one of the keys to defeating Japan. They never recovered.

With the loss of their carriers, the Japanese felt it necessary to resort to drastic measures. In late 1944, the Japanese started using kamikazes. During the last 10 months of the war, more than 5,000 Japanese airmen gave their lives in these suicide attacks against US naval ships. The tactic called for crashing their aircraft loaded with bombs into a Navy ship. The kamikazes aimed to sink US aircraft carriers.

The Japanese were changing their aircraft's bomb loads from torpedoes to bombs. They, therefore, were caught with unprotected ammunition on the decks of their carriers. Once fires were started by US attacks, the ammunition blew huge holes in the Japanese ships.

When the battle was over, the Japanese lost four aircraft carriers, a heavy cruiser, 322 aircraft and over 3,500 personnel. The United States lost one aircraft carrier (*Yorktown*), one destroyer, 150 aircraft and 300 personnel.

More importantly, according to Admiral Chester A. Nimitz, Commander-in-Chief of the



The Civil Air Patrol made a great contribution to the war effort. (EAA)

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The kamikaze raids worked fairly well. They wreaked havoc on the US Navy, and produced heavy damage and many casualties. Fortunately, they did not achieve their goal of stopping the progress of the war.

On the Offensive: Island Hopping Through the Southwest Pacific

The war in the Pacific was an entirely different war from the European Campaign. While the entire war in Europe was fought on a single land mass about one-third the size of the United States, the Pacific Campaign involved hundreds of separate islands scattered over millions of square miles. Thus, the problem for the Allies was that none of the islands they controlled were close enough to launch continual air strikes on Japan. This is why the Pacific Campaign is best described as a relentless struggle for island air bases.

This island-hopping campaign required that each island be invaded, then continually be supported with supplies. The Pacific War, therefore, required much more Navy involvement than had the European War.

As each island or group of islands was conquered, the United States built new airfields. These airfields were then used as bases to fly close-air-support missions in support of the next landing. Some of these battles became legends, and names like Tarawa, Rabaul, Bougainville, Kwajalein, Iwo Jima and Okinawa became household words.

The ultimate goal was capture and control of Guam, Saipan, and Tinian in the Mariana group of islands. If the Allies controlled these islands, they could start the strategic bombing of the Japanese Islands. The Japanese realized the significance of the islands, so the fighting was intense. The fight for the Marianas Islands, was particularly fierce. The Japanese casualties in this battle totaled 40,000. The United States suffered as well with over 7,200 killed and 18,000 wounded.

The Flexibility of Air Power

In command of the island-hopping campaign was General MacArthur. Admiral Nimitz and General MacArthur split the Pacific Campaign in half. The dividing line was the 159th meridian just east of Australia. General MacArthur's plan had two goals. One was to regain control of the Philippines, and the other was to capture the islands necessary to launch a bombing campaign against the Japanese homeland.

While the European Campaign was on going, the Pacific Campaign was somewhat ignored. The European effort received first priority for supplies and first line equipment. As a result, when MacArthur assumed command of the Southwest Pacific he said, "None of the three elements of my command — naval, air or ground — was adequate."



The "home front" continued sending thousands of pilots trained in aircraft like the North American T-6.



Major General George Kenney was MacArthur's air commander and he had his work cut out for him. Although there were over 500 aircraft in theater, his air force consisted of only 150 American and 70 Australian aircraft that worked. On top of that, the aircraft were spread out from one end of the southwest Pacific to the other.

Moreover, the problem of replacements and supply was formidable, and morale was low. General Kenney needed to fix these problems quickly. The Japanese were just outside of Australia and if they attacked successfully, the southwest Pacific Campaign could be over before it even started.

General Kenney's solutions to the problems were far from conventional. The first thing he discarded was the bombing doctrine used in the European Campaign. High altitude, precision bombing did not work in this theater because there was no industry to target on these islands. More importantly, Japanese resupply shipping was the target, and they just moved out of the way when these bombers dropped their bombs.

Instead of bombing ships from high altitude, General Kenney decided to bomb from low altitude. He decided the bombers could let the bombs go right at the surface of the water. They would then skip right into the side of the ships, just like when you skip a rock across a pond.



B-25s strafe and drop "Para-frags" on Japanese Ki-61 fighters.

He also came up with a new way to attack Japanese airfields. This idea called for small parachutes to be attached to fragmentation bombs. The parachutes were added so that the allied bombers could come in low over the airfield and drop their bombs. The parachutes slowed the bombs down so they wouldn't explode and hit the plane that just dropped the bomb. The new "para-frag" bombs tore Japanese planes into a thousand pieces.

Another new device was called the "Kenney Cocktail." This bomb was filled with white phosphorus. When it burst, streams of fire flew out for almost 150 feet. These bombs were perfect for the jungle environment since they caught enemy aircraft, supply buildings and troop shelters on fire and destroyed them.

The new weapons had two main purposes that were designed to support one main objective, and that was to gain air superiority. Attacking the shipping cut off the bases from supplies, and attacking the bases destroyed the aircraft and supplies the Japanese already had. In General Kenney's words, "clearing the air means more than air superiority; it means air control so supreme that the birds have to wear our Air Force insignia."

The Air Force spearheaded the attack. Its function was to clear the air, and destroy the enemy's bases, so that advancing allied ground forces could take control of the islands.

However, first, the advancing Japanese had to be stopped before they reached Australia. General MacArthur decided to move the troops into Port Moresby, New Guinea, just north of Australia.

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Normally, they would be transported by ship, but that would take at least 2 weeks. General Kenney suggested the Air Force could get them there in just a few days. Soon over 600 troops were landing each day into Port Moresby. General Kenney used all the Australian transports he could find and even ferried some troops in converted *B-17s*.

Moving troops around the theater and keeping them supplied was just one objective that General Kenney had to accomplish right away. He also had to stop Japanese shipping. Once that was done, the Japanese would be cut off from supply and reinforcements.

The battle that marked the beginning of the end for Japanese shipping was the Battle of Bismarck Sea, located north of New Guinea. General Kenney coordinated an attack with just about all the aircraft he had. First, *P-38 Lightning* fought the Japanese escorts for air superiority over the sea lanes.

While this battle was waged high over the Japanese ships, *B-17s* came in under the air battle to bomb the Japanese ships. Under them, *B-25s* and Australian *Beauforts* came in with torpedoes. A follow-up attack was then conducted by 12 more *B-25s* who skipped 500-pound bombs into the sides of the Japanese supply ships.



The *P-38 Lightning* battled the Japanese *Zeros* for air superiority. (Lockheed)

At a cost of 13 men killed, 12 wounded, and 6 aircraft, the Air Force sunk 12 of the 18-ship convoy. For the Japanese, it was as shocking a defeat as Midway for it meant the end of large-scale resupply and reinforcement. The Japanese were now forced to live on what they could get through on submarines and small craft.

Weakened by the lack of supplies, the Japanese were not able to hold off American forces. Air power's flexibility to get the job done directly contributed to the Allies' victories in the southwest Pacific. After the Allies pressed ahead with victories on Guam, Saipan and the Marianas Islands, long-range bombing of Japan could then take place.

The Bombing of Japan

The first positive note for the people back home was the first bombing of Japan. This took place on April 18, 1942. This was a significant event because it lifted people's spirits. The war was long and hard, and the people at home were making sacrifices too.

Back in Britain, the English were trying to recover from the terrible bombings of their cities. In the United States, rationing was taking place nationwide. Californians worried about an invasion by Japan. The war effort was felt nationwide. The first bombing of mainland Japan showed that progress was being made, and that the Japanese were not invulnerable.



This first bombing raid was led by Lieutenant Colonel James H. Doolittle. It consisted of 16 *B-25* bombers. The amazing thing about this operation was that the bombers tookoff from an aircraft carrier, and then flew 800 miles to Japan. This had never been tried before. The bombers were launched from the US Navy aircraft carrier *Hornet*. The targets were the cities of Tokyo, Yokohama, Yokosuka, Kobe, Osaka and Nagoya.

The surprise allied attack was so successful, not a single *B-25* was lost to the enemy. The bombers crossed the East China Sea and then crash-landed in China. One bomber flew across the Sea of Japan and landed 25 miles north of Vladivostok, Russia. Most of the aircrews survived, although two were captured and killed by the Japanese. Although little damage was done, the Japanese were alarmed that the skies over Japan were no longer safe from allied attack.

The next bombing of Japan began on June 15, 1944. This started the air campaign against the Japanese homeland. The first raids were flown from air bases in China. The bombing of Japan was carried out using a new strategic bomber designated the *B-29 Superfortress*. By November 1944, the island campaign in the Southwest Pacific had captured new air bases on the Marianas Islands. They were quickly put into operation, and the bombing effort moved from China to the Marianas.



B-29 Superfortress (EAA)

Once again, however, the doctrine of unescorted, high altitude, daylight, precision bombing did not work. The doctrine developed at the Air Corps Tactical School prior to the war needed adjustments. First, the same problem that happened to the bombing effort in Europe happened in the Pacific. The bases in the Marianas were about 1,500 miles from Japan. This meant that the *B-29*s had to fly without the protection of fighter escort. The results were the same as over Germany. Losses amounted to about 6 percent per mission.

The bombers needed fighter escort. This resulted in the invasion and capture of Iwo Jima. This island was only 750 miles from Japan and served two important roles. It served as a base for fighter escorts and an emergency landing field for damaged *B-29*s. By the end of the war, 2,400 *B-29*s made emergency landings on Iwo Jima.

Another problem that contributed to the high altitude bombing not working was the wind at 30,000 feet. The wind was over 100 mph and caused the bombs to go off course. A new strategy had to be worked out.

General Curtis E. LeMay decided to have the bombers go in at low level and at night. He also decided to use incendiary bombs, because precision attacks would be impossible at night. These firebombs also made sense because the targets were different in Japan than they were in Germany. The Japanese industries were scattered within the cities instead of being concentrated in industrialized

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**General
Curtis LeMay**

areas, like they were in Germany. This made precision bombing almost useless.

The job had to be accomplished by blanket bombing. Unfortunately, this also meant that civilian casualties would be inevitable because the Japanese homes were located in and around these industries.



**The *Chance-Voight Corsair* helped win air superiority in the Pacific Theater of Operations.
(EAA)**

On March 9-10, 1945, Tokyo was attacked. It was a night attack with 334 *B-29s* flying low at 7,000 feet with a total of 1,667 tons of bombs. The result was the most destructive air raid in history. Widespread fires created a firestorm that destroyed 15 square miles of the city. More than 83,000 people were killed and another 100,000 were injured.

The firebombs were very destructive. Since Japanese homes are traditionally made of wood with paper walls on the inside, they burned quickly. Many of Japan's larger cities were literally burned off the map. In total, 32 square miles of the most important industrial areas of Japan were destroyed.

The new strategy worked. Only 22 *B-29s* were lost during the raids. This meant that the loss rate dropped from 6 to less than 1.5 percent. The dramatic change was primarily due to the ineffectiveness of the Japanese fighters at night. Once again, flexibility was the key to air power's success. Low-level nighttime bombing successfully replaced high altitude daytime bombing. By mid-summer, the bombing of Japan had brought Japan on the verge of economic and moral collapse.

Atom Bomb Forces Surrender

In order to force the Japanese to surrender, plans called for an invasion of the Japanese Islands. However, the Japanese were tenacious fighters. They rarely surrendered, as the Allies found out during



the island-hopping campaign in the Pacific. If every Japanese soldier were to fight to the death, there would be terrible casualties.

In July 1945, there were still over 4 million Japanese soldiers fighting for Japan. President Truman feared that if fighting continued, hundreds of thousands of casualties would occur for both the Japanese and the Allies. For this reason, President Harry Truman made the decision to use the new “ultimate” weapon. He wanted to save lives.

On the 27th of July, at the final war meeting between the Allies, President Truman and Prime Minister Attlee of Great Britain issued an ultimatum to Japan. Japan was warned to surrender or face “inevitable and complete destruction of the Japanese armed forces and ... the utter devastation of the Japanese homeland.”

Japan replied through the Soviet Union, but for reasons that are still not clear today, the Soviets did not relay the message. Since Japan did not appear to be replying, President Truman ordered the dropping of the atomic bombs.

On August 6, 1945, a B-29, named the *Enola Gay*, dropped an atom bomb on the city of Hiroshima with a population of over 300,000. Two-thirds of the city was destroyed. Over 78,000 were killed and over 70,000 injured. Most of the remaining survivors suffered from the effects of the radiation for the rest of their lives. On August 9th, the Soviet Union declared war on a country nearly destroyed by war.



If a crew named an airplane, it was usually adorned with “noseart.” (EAA)

ACES IN THE PACIFIC

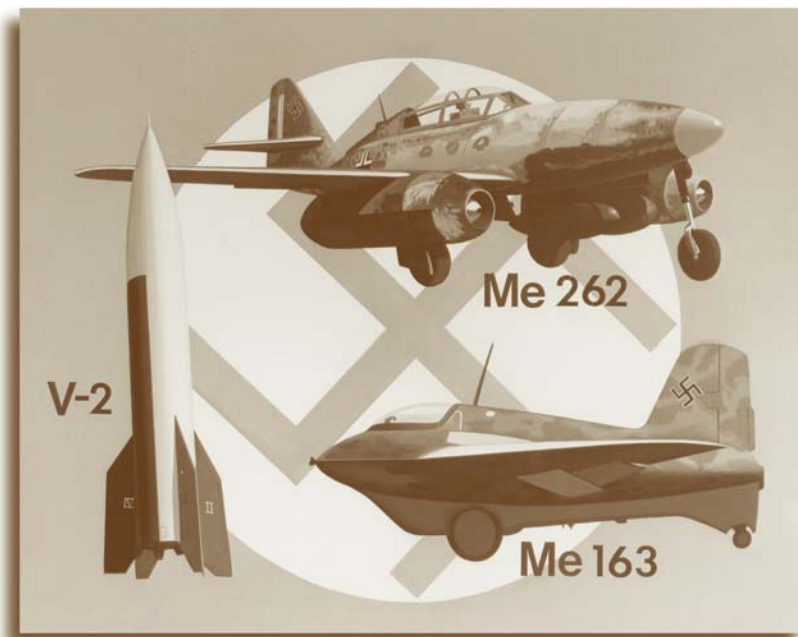
Although not as widely known as some of the German aces, Japan produced several outstanding aces during the war. The three leading Japanese aces shot down 248 allied aircraft. The three top-scoring American aces in the Pacific downed 112 aircraft.

<u>Japanese</u>	
CWO Hiroyashi Nishizawa	104
CWO Shaichi Sugita	80
Lt Saburo Sakai	64
Lt Wataru Nakanichi	55
<u>American</u>	
Maj Richard L Bong, USAAF	40
Maj Thomas B. McGuire, USAAF	38
Capt David McCampbell, USN	34
Lt Col Gregory Boyington, USMC	28
Maj Joseph J. Foss, USMC	26
Lt Cecil E. Harris, USN	24

Also on that date, the second atom bomb was dropped on Nagasaki, an industrial city of 230,000 people. Luckily, hills protected portions of the city from the blast. Less than half of the city was destroyed. Over 40,000 were killed and 25,000 injured. The next day the Japanese communicated by radio that they were willing to surrender. On September 2, 1945, the Japanese officially surrendered on board the US battleship *Missouri* anchored in Tokyo Bay. World War II was officially over. Over 78,000 were killed by the atom bomb in Hiroshima, Japan.

Lessons Learned

World War II ended the same way it began, with an awesome display of air power. The German Blitzkrieg in Poland was no less awesome a display of military air power to the people of Europe at that



The German Luftwaffe developed both jet and rocket weapons during World War II.

time than the atomic bombings were to the Japanese 6 years later.

During those 6 years, the entire nature of war, as practiced for over 6,000 years, changed. The airplane became the dominant weapon of war, and the aircraft carrier became the primary naval weapon. While no claims are made that the war was won by air power alone, neither can it be argued that control of the air was not essential to the success of every major military operation of World War II.

Air power in the United States grew during World War II, and its leaders learned a great deal about how to use it effectively. First, in

North Africa, the Allies learned that they needed to centralize the control of their air assets. This let them put all their assets together and overpower the Luftwaffe. Moreover, this provided the Allies with air superiority. Once that was achieved, the battle on the ground turned around. Air superiority became the number one priority of the air campaign.

Secondly, the American bombing doctrine that was initially developed to fight the war did not work. After terrible losses, the campaign was stopped and new technology and tactics were added in order to gain air superiority over Europe. The flexibility demonstrated by the Air Force leaders turned that losing situation into a winner.

The Pacific Campaign was very similar in that flexibility was again the key to air power's victories. General Kenney developed new tactics, procedures and weapon systems that were successful. Later, General LeMay did the same thing. He changed from high-altitude daylight bombing into low-altitude bombing at night. The changes were devastating for the Japanese and led to their defeat.

In the final analysis, the war was won by the technological and wartime production capabilities of the allied powers. Of all the allied nations, it was the United States that combined the manpower and materiel into the greatest manufacturing effort in history.

The final lesson that World War II hopefully taught us was the utter futility of war in a modern society. Twenty million people were killed during the war. Four million of these were civilians. At least three times this many were injured, and many were severely and permanently disabled. Warfare had finally reached a point where no one could win or lose, and the only sensible solution was to prevent wars rather than to fight them.



Key Terms and Concepts

- combined arms operations
- Blitzkrieg
- Luftwaffe
- Royal Air Force (RAF)
- ME-109
- B-17
- B-25
- B-29
- Zero
- P-51
- P-38
- airborne
- Battle of Britain
- radar
- Pearl Harbor
- Allies
- Axis
- War Training Service (WTS)
- Long-range bombing
- centralized control
- air superiority
- interdiction
- close ground support
- early air power theorists
- Air Corps Tactical School (ACTS)
- Combined Bomber Offensive
- strategic bombing: precision vs area bombing
- fighter escort
- Normandy Invasion
- air war in the Pacific
- kamikazes
- atomic bomb

? Test Your Knowledge ?

SELECT THE CORRECT ANSWER

1. The (**American** / **Japanese**) strategy in the Pacific was to strike swiftly in several directions, capturing the East Indies, Philippines, New Guinea, and the Marshall, Caroline, and Mariana Islands.
2. The primary purpose of the Japanese attack on Pearl Harbor was to (**destroy US ground forces in Hawaii** / **cripple the American fleet**).
3. After Pearl Harbor, the “contract” schools (**increased** / **decreased**) their production of pilots.
4. The WAFS personnel were (**military members** / **civil service employees**).

TRUE OR FALSE

5. The major allied powers in World War II consisted of the United States, Britain, France, the USSR and Hungary.



6. *At the end of World War I, the United States, Britain, and France had the most powerful air forces in the world.*
7. *At the beginning of World War II, France had the best prepared air force in the world.*
8. *It was under the guise of commercial aviation that the German Air Force was revived after World War I.*
9. *For World War II, Germany's warfare strategy was a combined arms operations.*
10. *The tactic of Blitzkrieg was stopped by the French using the Maginot Line.*
11. *Hitler was surprised when Britain and France declared war on Germany.*
12. *The Battle of Britain began in August 1940 when German troops landed on the beaches of Dover.*
13. *Britain and Italy joined forces in 1940, to defeat the Germans in North Africa.*
14. *The Germans used glider-borne and parachute troops to capture Crete in 1941.*
15. *On June 22, 1941, Germany invaded Russia.*
16. *By the end of 1941, the short-duration war Hitler had asked for settled down to a long struggle of land armies.*
17. *Once the United States entered the war, the basic allied strategy was to change from the defensive to the offensive.*
18. *At the beginning of the strategic bombing of Germany, the first priority targets were aircraft factories.*
19. *The first atomic bomb was dropped on Nagasaki.*
20. *The allied invasion of Europe was savagely contested by the Luftwaffe.*
21. *The Japanese strategy during the early part of World War II was to gain air superiority followed by an invasion.*
22. *Two major defeats suffered by the United States in World War II were during the Battles of Midway and the Coral Sea.*
23. *Pinpoint strategic bombing was used against Japan's industry during World War II.*
24. *World War II was won by the technological and wartime production capabilities of the allied powers.*
25. *The aircraft carrier became the dominant naval weapon of World War II.*